

Fraction Grids

Reporting Category Number and Number Sense

Topic Relating fraction and decimal equivalents

Materials

- Coffee stirrers or flat straws (ones that do not roll)
- Discovery handout (attached)
- Fraction-Decimal Equivalence Recording Sheet (attached)
- Base-10 blocks (flats)

Vocabulary

decimal, round, estimate, tenth, hundredth, thousandth, whole, compare, order, fraction equivalent, decimal equivalent, place value, value, digit, leading zero, decimal point

Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

1. Group students in pairs, and have them explore different ways they might be able to represent fractions, using base-10 blocks. Give each pair some coffee stirrers, base-10 blocks (flats), and copies of the Discovery handout. Allow students only five minutes to explore, and instruct them to record any findings on the Discovery handout.
2. Give each student a copy of the Fraction-Decimal Equivalence Recording Sheet. Allow them to keep the base-10 flats and stirrers for use in this activity. Ask each student to show $\frac{1}{2}$ of the flat. Then, ask each student to use a pencil to shade $\frac{1}{2}$ of the first grid on the recording sheet. Observe students as they figure out $\frac{1}{2}$ of the first grid. Discuss what different grids look like. Ask, "Do they all represent $\frac{1}{2}$? Do they all look the same? Is there more than one way to model $\frac{1}{2}$ with the grid?" Discuss what students did to find $\frac{1}{2}$. Ask, "How did you figure that out?" Make sure that all students have shaded in their grids correctly.
3. Reinforce what a row and a column are. Ask, "How many rows are in the grid?" (10) "How many columns?" (10) "How many rows or columns are colored in?" (5) "How would you write that in fraction form?" ($\frac{5}{10}$) Show students how to write $\frac{5}{10}$ in decimal form. (0.5). Ask, "How do you say this decimal?" (five-tenths) Emphasize that the decimal and the fraction are said the same way. Also, review that the first place after the decimal point is called the "tenths" place.

4. Ask, "How many little boxes are in the grid?" (100) "How many of those boxes are shaded in?" (50) "How would you write this in fraction form?" ($\frac{50}{100}$) Show students how to write $\frac{50}{100}$ in decimal form (0.50), reviewing with them that the second place after the decimal is called the hundredth place.
5. Ask students to go through this same process with the second grid. Tell them to use what they learned in working on the first grid to shade in the fraction and then write the equivalent decimal for the second grid.
6. The fractions with a denominator of 5 are a little more difficult. One technique is to color every fifth square, thereby forming a visual pattern. Some students will be able to reason that $\frac{1}{10}$ is equivalent to one row on the grid, so two rows are equivalent to $\frac{2}{10}$ or $\frac{1}{5}$. Another technique is to try to make 5 equal groups out of the 100 squares.
7. Have students complete the remaining grids. Discuss their findings, and ask them to note any relationships they notice.

Assessment

- **Questions**
 - What are some similarities between fractions and decimals? What are some differences?
 - Is there a relationship between multiplication and fractions and decimal equivalents? If so, what are they?
- **Journal/Writing Prompts**
 - Explain how fraction and decimal equivalents can be used in the real-world and how this concept is relevant to your life.
- **Other**
 - Have student pairs use the blank grids and work together to find decimal equivalents.

Extensions and Connections (for all students)

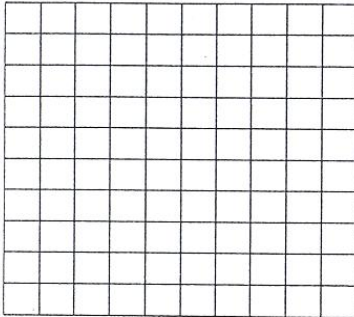
- Copy and cut apart the attached fraction-decimal cards for students to use in playing "Concentration." Players place the cards face down and take turns drawing two cards at a time to see if they are a fraction-decimal match. There are four cards for a full match. If a player draws matching cards, he/she keeps them. If another player chooses the other two cards that would complete a full match of four cards, the player with the first two cards can choose to not draw two new cards on his/her next turn, but take the two cards that make a full match instead. At the end of the game, students total their scores. A full match of four cards = 5 points; a half match of two cards = 2 points. The student with the highest score wins the game.
- Arrange for students to visit a local bank to meet with a bank employee to discuss the relationship between fraction and decimals in relation to money.
- Give each group of students a meter stick and ask them how they might be able to relate a meter stick to fraction-decimal equivalents.

- Have students use long pieces of bulletin board paper to draw a number line and place 0 at one end point and 1 at the other end point. Have them determine equivalent fractions and decimals between 0 and 1 on the line by using measuring devices or by folding the paper.

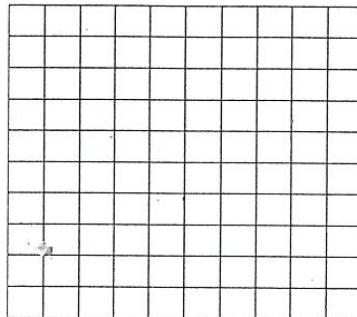
Fraction-Decimal Equivalence Recording Sheet

Name _____ Date _____

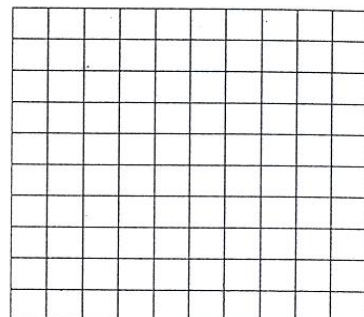
Shade in each grid below to represent the fraction shown below it. Use the grid to help you figure out the equivalent decimal for each fraction. Write the decimal next to the fraction.



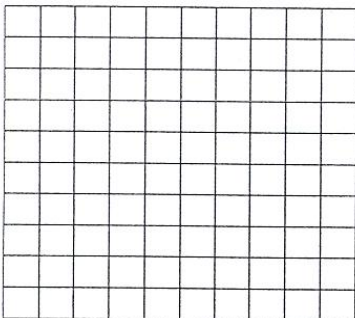
$$\frac{1}{2} =$$



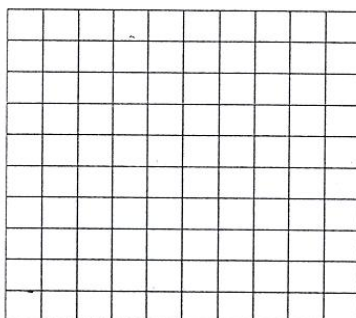
$$\frac{1}{4} =$$



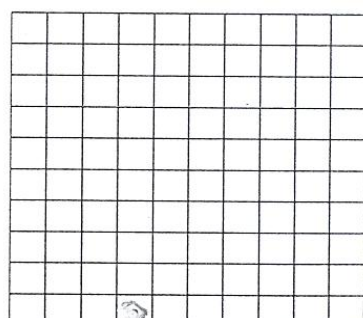
$$\frac{3}{4} =$$



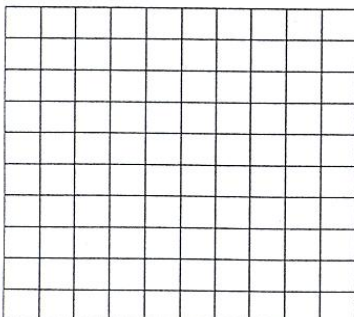
$$\frac{1}{5} =$$



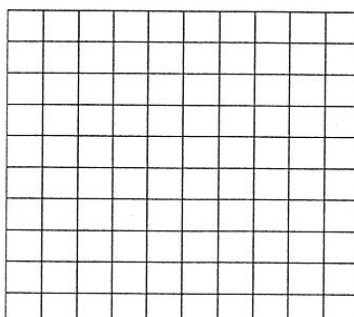
$$\frac{2}{5} =$$



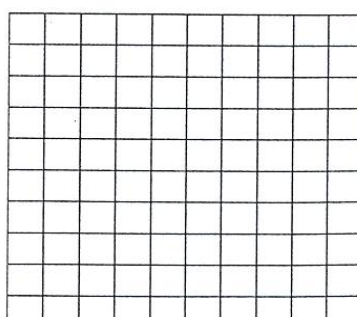
$$\frac{3}{5} =$$



$$\frac{4}{5} =$$



$$\frac{3}{10} =$$

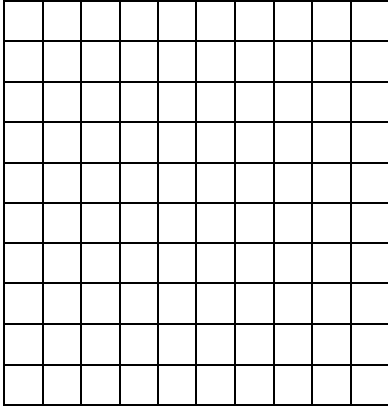


$$\frac{7}{10} =$$

Discovery

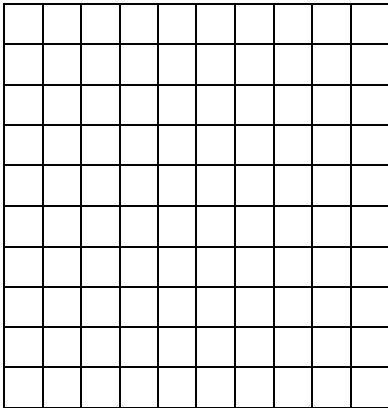
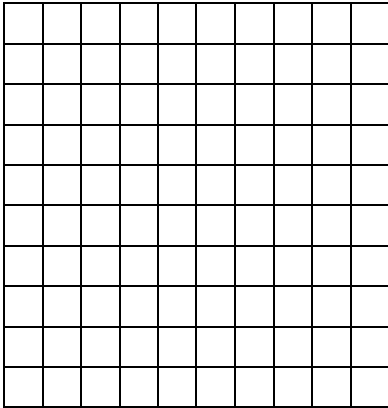
What fraction and decimal equivalents can you find?

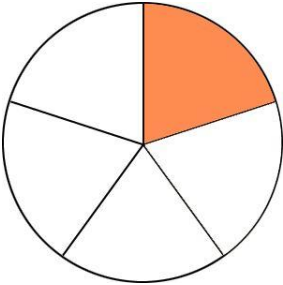
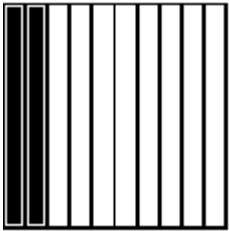
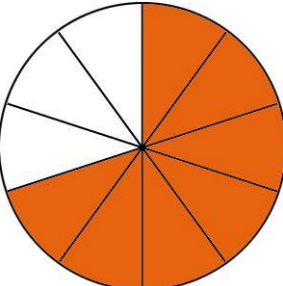
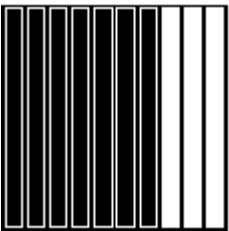
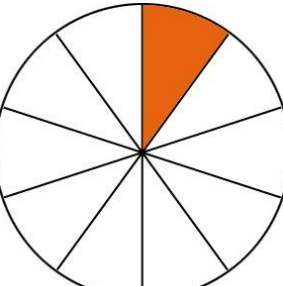
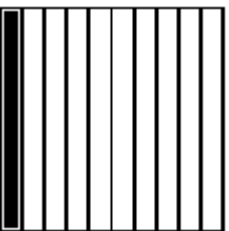
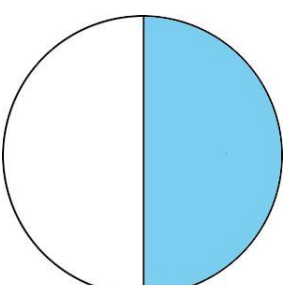
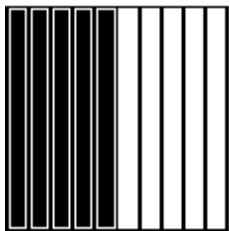
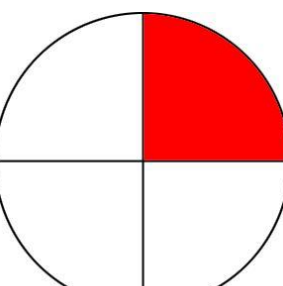
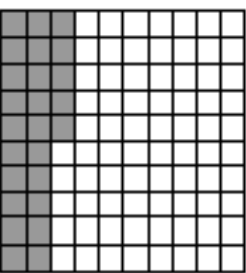
MODEL

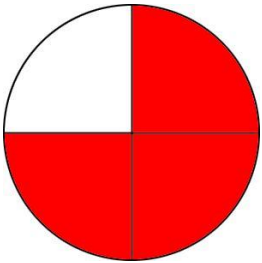
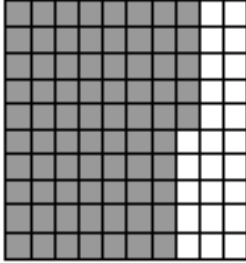
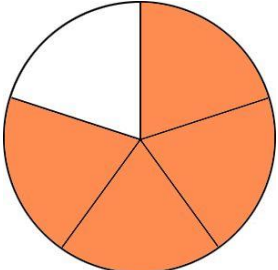
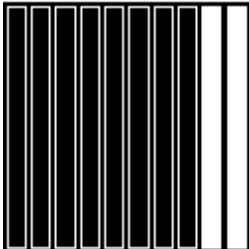
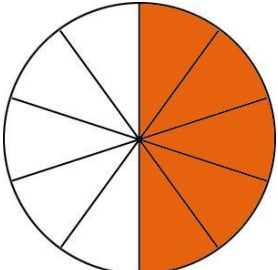
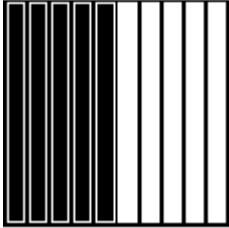
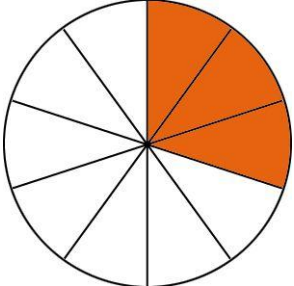
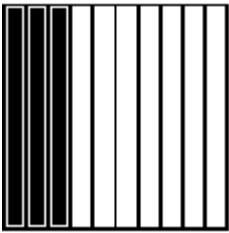
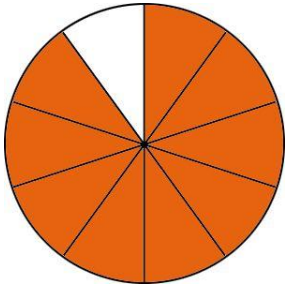


FRACTION

DECIMAL



	$\frac{1}{5}$	0.2	
	$\frac{7}{10}$	0.7	
	$\frac{1}{10}$	0.1	
	$\frac{1}{2}$	0.5	
	$\frac{1}{4}$	0.25	

	$\frac{3}{4}$	0.75	
	$\frac{4}{5}$	0.8	
	$\frac{5}{10}$	0.5	
	$\frac{3}{10}$	0.3	
	$\frac{9}{10}$	0.9	